/480 cont./

Fig. 16) was present at an analogous treatment also practiced /481/ by a medicine woman on a child at Yumbia, not far from the Salado. She rubbed him and blew on his body (1).

1. In the Diccionario Chiriguano-Español y Español-Chiriguano, etc. (p. 72), we find the word hunga translated "to rub, to manage" and the sentence Niyari ñerungarunga tein, iróti á ñe with the following meaning: "My grandmother rubbed me enough, but I did not get well." The medicine women, add the authors of the dictionary, use the word hunga to express the act of rubbing with the hand any painful part of the body, especially the chest, without any remedy other than the saliva they spit on their hand. These women attribute a special virtue to saliva.

The sick boy's father told me that, once suffering from prolonged headaches, he had had recourse to a sorceress, an old woman with woolly hair, who was called the Samba. She sucked the place where the ache was localized and drew out worms from it. The half-breed got well, of course.

In the toldería of Nawirenda, where there was a child ill with fever, his mother had made him eat crushed garrapatas (ticks). The unfortunate child's lips were purple from it.

I shall devote a special study to Chiriguano medicine men in a future volume of this Review. Meanwhile I shall limit myself to describing, according to the Diccionario Chiriguano-Español y Español-Chiriguano (pp. 166-167), the way in which these powerful personages customarily proceed when they are called to the bedside of a sick person. I am forced to have recourse to the observations made by another for lack of having been able to be present myself at the spectacle which Father Giannechini evokes with as much accuracy as vivacity. The great Chiriguano paye are now all in the Ivoka where they take

/482 cont./

Judging from this text, the Chiriguano sorcerer, like his Tupinamba or Siberian colleague, put himself into a state of trance so that his spirit, free from corporeal bonds, could go to engage in battle with the soul of the evil-intentioned individual who is implacable against his patient.

The hupia, that is, the magical force, is indispensable to one who claims to be a good sorcerer. At least this is the meaning I give to this word translated in the Diccionario Chiriguano-Español y Español-Chiriguano etc. (p. 73) by: "remedy, antidote," but of which it is said that possession is indispensable to every medicine man. This word suffixed to any noun whatever expresses the faculty, the power, the facility to make or obtain the thing signified by the noun. Thus a dog trained to hunt deer is wasu-rupia (wasu: deer), a warrior is tuwaiko-rupia (tuwaiko: enemy), etc.

Fig. 137. Calabash containing snake fat. Prov.: Saladito. (About 1/2 nat. size.)

Fig. 138. Section of bamboo containing chicken fat. Prov.: Caipipendí. (1/2 nat. size.)

Remedies. 1. Snake fat (mboikira) is efficacious against leprosy. The Indians keep it in a small calabash sealed with wax (Fig. 137).

2. A little cotton impregnated with castor oil (yandí) and rubbed on the skin is an excellent liniment for rheumatism.

3. A similar virtue is attributed to chicken fat (Fig. 138). In everyday life they resort to chicken fat or castor oil to anoint the body, which they then rub with roucou paste. Women generally have their

/482 cont./

faces and legs oiled in this way, which gives them a very strange reddish and shiny hue. This custom, which was already noted /483/ in the sixteenth century among the Tupinamba of the Brazilian coast, is tending to fall into disuse.

Roucou in paste form is kept in a small corn-husk bag (Fig. 139), /Fig. 139 appears here/ as is kalasapa, a substance composed of a mixture of roucou and pounded aroma seeds, which gives a violet color.

4. Jaguar fat (yaguapira) cures any "leprosy" (karatši) if one rubs oneself with it after heating it.

5. Iguana fat makes cramps go away and heals wounds. Its use is external.

6. The dried penis of a fox makes toothaches and earaches go away. For that it suffices to touch the ailing part with the end /Fig. 140 appears here/ of this member. The Indians consider it very malodorous and touch it only with repugnance. To avoid this inconvenience they provide it with a handle and shut it up in a bamboo case (Fig. 141).

7. Deerhorns heated and /Fig. 141 appears here/ applied against the neck will cure a stiff neck. The medical use of deer (wasu) horns explains the frequent presence of the horns of this animal in the archeological strata of the neighboring Andean regions. Some have thus been found in the ruins of the Alfarcito, in the Quebrada de Humahuaca (Debenedetti, 4, p. 21), at Tilcara (Debenedetti, 2, p. 232), at La Paya (Ambrosetti, 6, Fig. 235, p. 453), and at Tastil (Boman, 2, Vol. I, Plate XXIX, Fig. 78 f).

Horns adhering to a fragment of the skull and whose use could only have been magical or medical must be distinguished from the ones which the Indians work into awls. These instruments still have a ritual use and are reserved for piercing the lower lip of children when they are old enough to wear the labret. At least this is what Campana (p. 80) informs us. Besides, the Indians all have confirmed this detail to me. Formerly, the Tupinamba of Brazil practiced this operation with an awl of the same nature (see Métraux, 3, p. 105).

1: Métraux--364 E-5 (1929) 1930 SF10 Chiriguano SF10

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Fig. 139. Small bag made of corn husks, containing roucou paste. Prov.: Salado grande (upper Pilcomayo). (About 1/2 nat. size.)

Fig. 140. Calabash containing roucou seeds. Prov.: Caipipendí. (About 1/5 nat. size.)

415
237
757

Fig. 141. Case containing a fox penis (aguara-kankuy). Prov.: Ibopeytí. (About 1/3 nat. size.)

/484/

However, these awls are too abundant in each village for their use to be only sacred. It is probable that the Chiriguano use them as a simple tool for solely secular purposes.

At Tilcara, Debenedetti (2, Fig. 176, p. 232) discovered specimens made of deerhorn identical with our Chiriguano examples.

8. I have in my collections seeds whose virtues are multiple: they are an excellent remedy for skin eruptions, ulcers, and toothaches.

9. For stomach-ache the Chiriguano recommend the absorption of particles of wood (mboipinda).

10. Certain seeds (of a graminaceous plant?) when crushed give a paste or powder with which they treat animals whose sores are attacked by worms.

11. When cows' hooves tend to work loose, they bathe them with fragments of limestone (itakwi).

12. Fat extracted from a cow's foot is an effective ointment for cases of rheumatism.

13. The beak of the toucan is said to enjoy great medicinal properties. They grate it and drink in water the powder which comes from it (Campana, 111).

Stitches in the side and dysentery are treated with a piece of armadillo shell burned, ground, and dissolved in water, which the patient drinks.

In the Diccionario Chiriguano-Español y Español-Chiriguano etc. (passim) and Nino's book (pp. 288-290) is found many a very interesting piece of information on the pharmacopoeia of the Chiriguano. I shall summarize them in order to complete my own observations.

1. The oil which floats on kāwi, when it is done, is a good remedy for headaches.

2. Salt, ground and drunk mixed with the urine of a small child, quiets stomach pains.

3. Rheumatism is doctored by applying on the ailing part a branch of ulala (ñankawina) from which the thorns have been removed and which has been heated.

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4. To stop dysentery, one must drink a decoction made of corn and watermelon seeds ground together.

5. Stitches in the side are treated by drinking a fragment of armadillo shell ground up and by rubbing the ailing place with a portion of this same calabash heated.

6. Tumors and swellings of the throat or knee are made to disappear by applying on the sore region the leaves of a shrub called urukuna, heated in a pot. Another herb (yundurimbiu) has the same virtue.

/485/ Urukuna leaves put in compresses on the skull dissipate headaches, protect one from congestion, and cure erysipelas. The leaves of yandipa (hediondilla) have all the virtues of urukuna.

7. Hemorrhages are stopped by means of latex or the roasted leaf of the liana supuapempe.

8. Kaa-upaya is an efficacious herb in cases of stomach ailments; and soto root cures pains in the feet (rheumatism?).

9. Guaya is a liana which cures any swelling in the side.

10. Goiter, rare among the Indians, is attributed by them to the sun. They treat it with tutía, a yellow fruit which reminds one of an apple, or by putting around the neck compresses of the blood of the gallinazo, carancho, or banduria, kinds of vultures.

11. Ophthalmia or conjunctivitis is doctored with drops extracted from the bark of the algarrobillo or with the glue taken from the bud of the membiría plant. The leaves of yandi-wope are excellent for cases of ophthalmia.

12. A variety of caraguatá makes diarrhea stop.

13. The flower káa-ro (bitter herb) cures skin eruptions and is as good for malaria.

14. The herb iná (tooth of water) is a remedy against whooping cough, which can also be treated with an infusion made of boiled or roasted wasps and drunk warm.

15. Tingi bark attached around the belly is excellent for fighting dropsy, as are the leaves of the aturu (palo de india), a tree reminiscent of laurel, or the herb kaa-paye, taken as an infusion.

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16. Gonorrhea is treated with the boiled root of the mistol and tapir fat.

17. Earaches pass away if drops of chicken, beetle, and cicada fat are poured into the auditory canal.

18. The root of chirimoya del monte (aratibu) is a good antidote if one feels poisoned.

19. Snake bites lose their seriousness if one applies some of the herb ururu, guaje, tobacco, or nicotine on the wound.

The sap of the liana inipo-paro-mboyi, although poisonous, nonetheless constitutes an excellent antidote for the same cases.

20. By putting melted wax on the wound, you do not risk dying when a mad dog has bitten you.

21. Wounds produced by a sharp instrument heal if burned chicken feathers are spread on them.

22. It suffices for a woman to drink the powder of a shell in water to put her fallen uterus back in place.

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23. The red leaves of the aflankamisa, iwira-ro (quebracho cacha) bark, the woody plant toba-pitfe, taken as infusions, are as many remedies for fever.

24. Compresses of kaa-ruruntirái make abscesses burst.

25. In case of constipation it is good to drink the latex of the kaa-si (cardencha, lechetrema).

26. After any serious fall one must drink water in which one has made an infusion of a sort of vervain (kaimberai) pounded beforehand. The consequences of the shock will not be felt if one applies on the sore regions poultices made with this same plant carefully ground.

27. Recommended for spreading on sprains are cara guatá leaves or a thick glue obtained by boiling the bark of iwira-pitiyu-wasu. This substance is equally good for fractures.

28. The Chiriguano chew the bark of iwira-pitiyu-wasu to make their violent toothaches stop and to make their teeth more solid.

29. A cataract is doctored in the following way: One boils kuruwa leaves and bathes the patient's head with this infusion. Then one takes the gall from the dorado fish with pincers or

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757 824 237 some similar object and rubs the sick person's eyes with it until the cataract comes off.

30. The tannin contained in kurupaî bark is a disinfectant 752 757 824 which hastens the healing of wounds.

31. The leaves of kurupaîraî (small sébil), squeezed and put into compresses on a tumor, act in a lenitive way.

757 824 [302] 32. The plant wambero (kind of purslane) is a laxative. It has a scarlet flower which girls dry and pulverize to be able to color their cheeks red.

33. Iwowi bark, pounded and roasted, is a good remedy for any pain affecting the limbs. The ash taken from the pips of this [752] tree hastens the healing of wounds.

34. Powdered inái seeds make teeth fall out.

35. The root of the isipo-poro-mboyi, ground and kneaded with salt and tallow, is an emollient which is spread on tumors.

36. When they feel pains in the limbs, the Chiriguano apply on the ailing part a poultice made of iva-wasu roots, crushed and roasted.

37. The seeds of the yandi-wasu, taken in doses of two or three, are a good emetic.

38. The sarái is a tree reminiscent of our walnut tree. Its inner bark yields a powder which is spread on skin eruptions.

39. A climbing plant called kaa-ruwa is supposed to have medicinal properties. /487/ It is taken in the form of an infusion, or poultices are made with it after it is pounded.

40. Another climbing plant, the kaa-tai (barba de chivato) is a very active caustic which can produce burns if the compresses made with its flowers, leaves, and twigs ground together and mixed with water are kept on too long. If the hands are rubbed with this plant, they become numb.

41. The roots of the shrub mboipina, well cooked, yield a broth which combats atrophy.

757 825 42. A species of bug (tambeyùa) is used in the native pharmacopoeia as a caustic.

757 271 43. The Chiriguano have great faith in the virtue of hot water. Every sick Indian has beside him a small vessel the size of an egg, full of hot water. Those who are attending him

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271

wet their finger and moisten his lips (Campana, p. 113). The patient must also drink this water.

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[175]

Chiriguano medicine in the 18th century. A manuscript of the 18th century, written by Father Manuel Mingo and kept in the Library of the College de Tarija, contains information of the greatest interest on the way in which the Chiriguano used to doctor themselves when they were still independent. Here is the translation of the passage in question:

"The manner in which they doctor themselves in case of sickness is curious. Sometimes, when they feel sick, they go immediately to bathe inside their house in jars or a wooden basin. Sometimes they have several herbs applied, which they go to get in the fields or thickets. Sometimes also they allow an enema or clyster to be administered to them. This instrument (according to what I could see at Tariquea) is also very curious. It comes down to a small calabash or hollow gourd with a round opening on top and a small hole at the bottom. In the lower part one fastens or puts a hollow nozzle or a small hollow reed corresponding to the nozzle. One pours through the top (that is, through the large round opening arranged in the swollen part of the calabash) a broth of urine with salt. After that, the one who is acting as nurse or orderly blows hard through the upper part or from the top by pressing his lips to the opening or window of the calabash, and the force of the breath makes the liquid pass into the patient's intestines." (Fol. 107-108).

Nordenskiöld (14, pp. 184-196), who in a recent book went full length into the matter of the various instruments utilized by the American Indians for giving enemas, distinguishes two types: those which are provided with a rubber or leather bulb or a bladder, and those which amount to a simple tube. The one described for us with such a wealth of details by our missionary belongs to the second type, although /488/ exhibiting some similarities with the first. It can be considered as intermediate between the two.

/488 cont./

757 114 The explorer Eric von Rosen tried to demonstrate that some objects found in northwestern Argentina are clyster tubes or nozzles. Nordenskiöld is also of this opinion. As for me, I am all the more tempted to adopt this hypothesis because I could not otherwise explain the presence of this instrument 757 among the Chiriguano. No Tupi tribe, as a matter of fact, 171 with the exception of the Omagua on the upper Amazon, 194 seems to have resorted to enemas in case of illness; at least not one of the numerous travelers who gave their attention to these Indians mentions the operation among them. There is no doubt that the Chiriguano borrowed this curative method and the corresponding instrument from the nearby Andean peoples. We know that the Quichua /Quechua/ gave each other enemas, as is proved by the discovery of a leather syringe in a pre-Hispanic grave of the Ollachea Valley in eastern Peru (Nordenskiöld, 14, Fig. 74, p. 188). (To be continued.)

000 /The bibliography, pp. 488-493, is omitted in the translation; see the foreign text. The following "Table of Contents" appears at the end of this volume of the Revista, along with the tables of contents for the other articles in the volume. The lists of plates and figures which follow the table of contents in the translation were made up from the captions and are not part of the original text./

/598/ Studies on the Culture of the Chiriguano Indians

by Alfred Métraux

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137 824 ALGARROBO NEGRO. -- Among the Indians this is called "Ivopene," and the whites call it tusca; it multiplies and grows very fast. Sometimes 20 or 30 newly sprouted plants can be counted around a single cake of cow dung, which indicates that the cattle eat it in abundance, and where it does not already exist they sow it with their bowels. [842] It grows to a height of some three meters and is very thorny, which makes it difficult to travel through places where it is abundant; when there is no other food it is one of the Chiriguano's resources.

[322] ALGAROBILLA. -- The wood of this plant, which the Chiriguano call "Igüirayepiro," is black and very good for cabinetmakers; it is a species of ebony and is strong. Implements of war and those for fiestas of the tribes are made of this wood; its trunk is twisted, and it rarely has a single trunk; the flowers are yellow and the berries much sought after, by goats, but it makes them abort.

ALGODONERO /cottonwood/. -- This is a leafy tree with many branches; it grows to a height of two meters, has yellow flowers and a white boll when it is ripe, which is then picked, dried in the sun, the material pulled away from the seeds and cleaned. The "mandiyu" cotton is very useful; hammocks, ponchos, saddlebags, and sacks are made with it; it would even be easy to manufacture macana, but this is not done because what comes from outside is very cheap and /19/ [757] shower, even though it is not as strong as the other. Its leaves used as a poultice are anticancerous, and its seeds in the form of a pomade work against herpes and skin eruptions; oil for lighting can be extracted from the seeds.

ANNONA. -- The annona is a bush which grows to barely one meter; it has congenial places, the pampas, which have soil mixed with sand. In the said pampas it thrives in abundance, but it is even found in other places. The ripe fruit is red and like the pineapple in shape, but the pulp and seeds are like the chirimoya, as is the flavor of the pulp. Before it ripens, even the skin is very similar to that of the chirimoya. The Chiriguano call it "Araticu."

ASPIDOSPERMO BLANCO. -- This tree is of great size and it is abundant almost everywhere; the wood is white and good

/19 cont./

139 824 [859] in dry places: when dampness penetrates it, it is destroyed in a few years, as experience has shown. The bark that is found under the first layer is split, washed in tepid water, and left to steep overnight; it cures intermittent fever. The Argentinians call it cacha, the whites quebracho, and the Chiriguano "Iquiraco."

[862] AZUFAIPO /jujube tree/. -- This is abundant hereabouts and is a tree of medium size. Its wood is not valued very highly, but the fruit, the size of a grape seed and of a dark coffee color, is a great resource in times of scarcity for the poor Chiriguano. It ripens in January and February and is liked even by cattle and by sheep and pigs. The whites call it mistol and the Chiriguano "Yuá."

245 BANANA TREE. -- Cultivated in orchards and well fenced-in fields, it forms a grove, and each plant yields or produces a cluster, very large on some of them. When the ripe cluster is removed, the plant that produced it must be cut in order that the others may produce their own. There are several [862] varieties, large and small, the latter very sweet and eaten as fruit, and the former only when boiled and roasted; the whites call them plátano, and the Chiriguano "Pacoba."

139 824 [871] BEGONIA ACUOSA. -- This is a tiny little bush one vara in height, which under the ground has a large root like a watermelon and even larger; it contains much pulp which, when squeezed, yields potable water and is used for it in times of scarcity. The Chiriguano call it "Sipoi."

[342] CATALPA. -- This is a large tree and fairly strong. Its wood is used in the construction of houses. The color of the /20/ wood is dark, but when it is newly cut it is somewhat [515] green. Its flowers are purple, and the Chiriguano chew them to whiten their teeth; they are bitter and because of this the tree is called "Tayi," or bitter. In Chiriguano, the whites call it lapacho.

CEIBA. -- A large tree with deformed trunk, and furnished with sharp points, broad leaves, and large, white flowers which produce a material similar to cotton without fiber, for which reason it is smoother and shinier; it is used for mattresses and pillows and candle wicks. The wood is spongy and not at [322] [415] all hard; from it are made troughs to hold water from year to year and in this way they are not soon damaged. Its ashes

/50 cont./ ETS ashes
are good for the manufacture of soap. the bark is an emetic. The whites call it toborochi and the Chiriguano "Samuú." There are several varieties and all of them are utilized to some degree or other.

CEIBO. -- This tree is smaller than the former, but its wood is much superior, very fibrous, and rather light in weight, being used to make troughs which are very durable since they neither split nor are eaten by wood borers. It is very pretty when it blooms; the flowers are fiery red and good for salads. The Chiriguano call it "Suinandi."

DRAGO /dragon tree/. -- A tall tree, straight and quite thick; the wood is strong and useful. If an incision is made in the tree, a very red resin comes out; its bark is the best for making the teeth hard and for curing scurvy. The gum called "dragon's blood" is extracted from this tree. The whites call it tipa and the Chiriguano "Gũirapitiyu guasu."

ENEA /cattail/. -- An aquatic plant which abounds in certain ponds and pools formed by the water of rivers which flow away from the main stream; the Indians use it for roofing their houses, muleteers for packsaddles, and others for mats in the dwellings, on which they also have their bedding for sleeping. This is the totora or matara of the whites and the "Caipempe" of the Chiriguano.

ESTORAQUE /storax/. -- This is a very large tree of the forest; it has whitish flowers and yellow fruit the size of a fig, which is edible and a favorite of parrots and monkeys; the Chiriguano eat it as a fruit and call it "Aguai."

GARCATEA or CARICA MAMAYA. -- This tree is not very abundant nor is it found in every section. It is of normal size, with a straight trunk and smooth bark softer than the fig tree; the wood is soft and is of no use at all, being similar to that of the ceiba, or toborochi. Its leaves are like those of the fig tree, and the fruit is of the /21/ same size and form, but yellow; it is edible and good when boiled or roasted, if eaten raw, it hurts the mouth. In Chiriguano it is called "Caincantina."

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137 824 [245] GUAYABO /guava/. -- This fruit-bearing tree is found wild and cultivated; it is of medium size, and the fruit, when ripe, is yellow on the outside and purple on the inside, and its bittersweet flavor is very pleasant and laxative. The green fruit and the roots are astringent; the Chiriguano know it by [262] the same name. The wood has no use at all, and even if it did, the Indians would not use it because it produces edible fruit. They regret it when any of these trees and others, like the algarrobo, are destroyed.

GÜEMBE. -- This plant thrives on the trunks of high trees, where it puts its root, and others which penetrate the ground [492] hang down from there. The roots and lianas are dark in color; very strong and durable halters are made from its bark; it is not found everywhere. One encounters it from the left bank of the Parapiti River; its fruit is similar to that of maize, for which reason it is called maize of the air, and it is edible.

HIGUERA AMERICANA /American fig/. -- This is the [262] guapoy of the Chiriguano and the biboxi of the populace; although the fruit is rather sour, it is edible. Bats like it, and it [751] is annoying to have this tree near the dwellings; it has a milky juice like the common fig tree, which, applied to wounds, [245] heals them. In addition to the above fig tree, there is the common one which flourishes with very little care, in the towns, [439] especially the Mission ones, it is widely cultivated by the [431] natives and its fruit is used by them for gifts and trade with the whites.

244 MANDIOCA. -- This plant is called "Mandio" or "Mandiporopi" by the Chiriguano Indians. A little book written by a Jesuit missionary of the old Paraguay missions relates that this plant was left to those Indians by Saint Thomas the Apostle who, according to their tradition, came here to preach the doctrine of the Redeemer. Mandioca is [252] an excellent food and very digestible; it is eaten boiled, [262] roasted, and fried in lard. It is a plant cultivated by whites and by Indians.

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137 824 MARA or CAOBA /mahogany/. -- This tree is found in all sections. It is a strong wood, but the white part at the sides is subject to decay. It is rather heavy and hard and is [342] [352] only used for door and window casings and even for tables. The leaves are permanent, but not too good for shade. If the [957] leaves are touched with some force in order to pick them, they cause a skin eruption which disappears only when treated with bees' honey; I cured myself this way twice.

137 /22/ MELOCOTÓN /peach tree/. -- This tree, native to Persia, is quite productive in this region, but its fruit, severely attacked by the black butterfly, does not reach maturity because it always has worms. The apple tree grows in high places and where the atmosphere is not so hot, but both of these are orchard trees, not native ones, having been imported by the whites, who cultivate them, which can also be said of the quince tree.

137 824 MOLLE. -- This tree is not found in the central part of the region and thus is not native here, being obtained only by cultivation. The whites and the Missionaries have introduced it into the towns with good results. It is found in abundance in [959] the district under the jurisdiction of Padilla; it has permanent [2073] leaves, which are medicinal, as is the resin which comes from the trunk; a cooling beverage, pleasant and similar to wine, except that its odor is somewhat disagreeable, is made from [957] the seeds. The eucalyptus is another tree which thrives regularly here, but it has also been imported; its leaves, also permanent, are very good medicine for the endemic fevers; its trunk is an excellent wood. Neither tree has a name in Chiriguano, from which it can be deduced that they have been imported, like the grape vine, the common fig tree, the peach, quince, etc.

MORA OR MORERA /mulberry/. -- This tree is found wild from the left bank of the Parapiti River in Cordillera Province. It rises to a height of some 15 meters, is bulky with a very leafy top, and the fruit is smaller than that of the cultivated mulberry; the wood is solid and compact like that of the soto and has even better qualities; it is used for machines for milling sugar cane, plantations of which are common from the banks of the Parapiti River, where sugar of the highest quality

/23 cont./ some trees[1] are covered with long
[137] sharp points and others are not, only having an occasional im-
[825] perceptible sharp point: the fruit of both is pleasant and serves
[439] for gifts and trade for the Indian, who sells it to the whites,
[431] the ones who, rushing to get rich more quickly and easily, are
[548] little concerned about the ñopal and the fig tree. In Chiriguano
it is called "Saint."

PALM or PALMER. -- The palm tree likes congenial places, where immense forests are formed and sometimes grow all around a lake like a great garland: it is a very tall and smooth tree without a single branch. Its leaves are in the form of a
[436] fan and are used to make hats and for sieves, which are sold
[342] for 30 or 40 centavos apiece. The wood is good for joists in houses, and it is also split into shingles for roofs and is quite durable, if the precaution is taken of cutting them after the full moon. In Chiriguano it is called "Carandai," and the place which they occupy, "Carandaiti," palm grove.

PALMA CHRISTI. -- A not very durable plant, it grows to a height of four meters, has a soft, hollow trunk, large leaves, /24/ and flowers in the form of a bunch of grapes. The seeds are found inside little burrs, like chestnuts; said burrs in some plants open by themselves in the warmth of the sun, while others must be opened or carefully broken with a little hammer or a stone. The name indicates that it is a beautiful plant, but this beauty is in the broad, abundant petiolate leaves. There are several types with reference to
[757] size and quality of seeds: I know five kinds. Castor oil is
[302] extracted from this plant or from its seeds for use as medicine; we use it in the missions to fuel the lamp of the Blessed Sacrament, and the Chiriguanos mix it with "Achiote" seeds and put the resulting cosmetic on their faces and on their calves down to the feet. In Chiriguano the plant is called "Cauiro," and the oil, "Yandi." Even the leaves of the
[759] palma Christi are medicinal, some being hot and others cool: thus when headache is a result of overexposure to the sun, the leaves of the white spurge are applied; if, on the other hand, it is the result of high humidity, the leaves of the red spurge are applied. The seeds of the dark purple spurge are very small, but contain more oil than others.

[1] A [i.e., ñopal trees.--Arnold]

/36 cont./

245 PAPAYO. -- This tree is neither native like the palma Christi, nor is it found wild like the latter. It is grown in orchards or in well-fenced fields, grows very fast, and produces fruit one year after being planted. Its trunk is straight, soft, and hollow; some have two or three branches and rise up to four meters high. The fruit is rebounding, yellow, with a smooth skin, of the size and shape of a small melon, even the flavor being somewhat similar, but it is more digestible. Many fruits are bunched around the trunk and are also found here and there at each leaf, but always attached to the trunk. The plants which produce the fruit are the good ones, and they call them "females." There are others which they call "males," but their fruits are useless and are not attached to the trunk, but rather hang from it like streamers. It is useless to pick them. To have a good papayo tree they assert that, in transplanting one, it is necessary to take the precaution of always putting or burying two plants in each hole, one of which will always be a female, and the one which turns out to be male will be pulled out. I do not know if this is true, but I did it this way in January of this year. The fruit contains many seeds which, when ground and drunk in an emulsion, are good for getting rid of worms. The fruit and the tree have a resinous milk. Therefore, in order for the fruit to be good and digestible, it is better to cut off the ends and make about five or six vertical cuts so that this resin may come out; by the next day /illustration appears here/ /25/ it is already very pleasant. It is nevertheless best to take the precaution of letting them begin to ripen on the plant itself; in this condition, uncut, they will last up to six days without going bad; then they can easily be transported great distances.

PASSION FLOWER. -- This is a climber which is found on fences, clothing them in the rainy season with abundant foliage, as does the "supua," whose fruit is edible and good roasted or boiled, as is the leaf. The fruit of the passion flower is of the size of an apple and just as smooth, the skin is thin and the inside is found to be covered with a white, stringy membrane. When this is broken, the seeds of the fruit come

[TEXT CONTINUES ON P. 43]

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/25 cont./

[139] [824] forth bittersweet and very good. These are ash-colored and pearly and very highly regarded by Chiriguano and whites. The blossoms of the passion flower is purple, forming a garland like a crown of thorns: it has its calyx, five petals and three pistils, for which reason it is called passion flower, and it is certainly worthy of admiration. The Indians call it "Murucuya."

[199] PEACH. -- A euphorbiaceous plant, this little tree exists in a cultivated state and was introduced into this Chiriguano region by the white Christians. It grows in orchards and elsewhere, and its maximum height is three meters. Its small [151] trunk is slender and top heavy, and its fruit consists of black seeds which are not edible but which, when ground and diluted in water, make a powerful purgative and therefore must be used with great care, because they can cause death.

139 SAUCE /willow/. -- It grows and develops on the banks and in the bed of torrents, as well as on the shores of streams, which shows that it seeks damp places, but from these places [342] the force of a flood often uproots it. The common willow has no special qualities; only its branches are useful in the building of houses because they are flexible, fibrous, and not heavy; little use is made of the trunk. It is a tall, large tree with very tiny leaves. In addition to the common willow there is also the weeping willow, whose branches touch the ground; it is neither native nor found wild; some whites plant it to beautify their interior patios. In Chiriguano the common willow is called "Iquiapuca."

SAUCO /elder/. -- It is not found everywhere, only being found along streams with little water which are in the wood. It grows to four meters in height. Its trunk is slender and soft, its branches have a pith which is easily extracted, and its white flowers in the shape of a parasol are sudorific. The whites do a good deal of searching for this flower /26/ for their illnesses. Even the leaves are medicinal; when drunk in a decoction they are a good purge. What a pity that it is found in such limited areas!

/26 cont./

137 824 as straight as cane. Beyond Santa Cruz there are still groves; in addition there are groves of another cane called "Bambú," which is the best known, and in Chiriguano it is called "Tacuarembo." [419] It rises to a height of about 15 meters and is used for making /27/ ladders and scaffolding in construction 249 because it is light and strong. The shoots are tender and contain a sugary substance highly regarded by the Indians; it is not sought much today, because there are abundant plantings of sugar cane, which is of great utility for the production of sugar and alcohol. This last thrives with great ease and little work. Planting is done in two ways, making furrows and burying it or planting cuttings. The former is the better method where the freshets of the rivers do not penetrate. On the slopes and tops 137 824 of hills which contain water there is another sort of slender cane, very strong and heavy, which is not hollow like the other classes and is called caña brava by the whites, and [285] "Tacuarembo" by the Chiriguano. They use it for weavers' [513] reeds and for sleeping cots.

TAMARIND. -- This beautiful and useful tree is not native, but it thrives with enough care and grows to a respectable height; the fruit that it produces is abundant, consisting of abundant pods more or less the size of chick-pea pods; the pulp is blackish and pleasant to the taste, but it is bad for • [157] the teeth. It is astringent and is administered as medicine for intestinal inflammations, especially to children. It is also [272] a good tonic drink on excessively hot days; it is prepared with sugar, water, and a little of its pulp. The tree is rather sensitive to cold, and the flowers wilt easily with the south wind. For this reason the whites plant it in their patios, which are surrounded by the living quarters.

TARINGUI. -- The name of this tree is Chiriguano. The taringui is found in some regions, but not in others. It is of the cactus variety, rises up to six meters, its branchage is abundant and close, which gives a fine shade against the blazing rays of the sun. Its branches or leaves are striated and armed with spines; the fruit is tiny, but sweet and otherwise pleasant, and much liked by foxes, who only get it when it falls from the tree. The ulala or opuntia is smaller than the taringui, its leaves have the same form, the color is ash-gray and they are less a abundant, or, more properly, few. The fruit is a smooth berry

/21 cont./

137 824 [262] which is purple when mature and opens into three sections when ripe. It has an insipid sweetness, but one which both whites and Chiriguano like. The color is a bright purple. It is abundant, and in certain years of scarcity it is a resource for human life in the months of February and March. In Chiriguano it is called "Ñacagüiñu." The caraparí is another cactus, taller than the preceding ones, which also has its congenial land. /28/ since it is not found everywhere. It is admirable for its tall, striated leaves or branches, ash-gray and armed with spines; its fruit is very pleasant and also sought [342] by foxes. The trunk is soft like that of all cacti; nevertheless [759] doors are made of this wood and are durable enough. The pulp of the trunk is used medicinally to cure liver ailments, etc. They say that it is even good for goiter. There is another species of cactus which grows to some 20 or 25 centimeters; it is round and thick, striated and armed with spines. [524] In Chiriguano it is called "Zipepe." The children, as we shall see, make wheels by cutting off its spines, and, making it roll, they use it as targets for their arrows. Finally, there is another which is trailing and long, covering the ground where it grows and making the place impenetrable. This has and [262] produces a very delicious fruit which is called "Tapiacaru" in Chiriguano.

TILANDSIA. -- This plant is known to the Chiriguano [342] by the name of "Caraguata guasu." Its special place is the [283] hills, and among them it has some more congenial to it; it [492] grows well enough, and its leaves are extraordinarily broad and long and ash-gray in color; in the middle there is a thick stalk which rises quite high and is good wood for house rafters; from the crushed leaves they make cord and from these are made first-rate halters for tying up animals in the rainy season. [286] The Toba and even the Chiriguano make a kind of net which [171] they call chipa or "añapoca," which is very useful, inasmuch [482] as the women can carry any weight in a bag of that kind; from [227] the same they make nets so as to be able to fish in the rivers, and these are pieces of work which would attract attention in any part of the Old World.

222 /29 cont./ It is hot, and some cure sickness,
[957] or inflammation of the eyes, with it. Nevertheless, one should not confuse this little plant with another similar one whose fruits lack flavor and which is called by the Chiriguano "Aguara quii," which is to say, literally, chili pepper, of the fox. The best way not to confuse it is to taste the fruit; it is found everywhere.

243 TRIGO /wheat/. -- The Eternal Creator of all things in his bounty and mercy arranged that this small plant, necessary in every aspect, should yield its fruit in every region inhabited by man; thus, in spite of the excessive heat, it is harvested here in abundance, and the farmer is not robbed of his hopes if he takes care to irrigate the field opportunely. Barley also flourishes in irrigated lands, but the cultivation of both has been abandoned for reasons already expounded in these pages and also because birds greatly bother both crops, as also happens in the rice paddies, which will be found empty if they are left to the discretion of our flying friends.

[824] There also thrives together with maize, or in other places,
[412] the wheat called Guinea, or sweet sorghum, which the Chiriguano call "Tricu" and which is indigenous; it is sweet, matures with maize, and they suck it, as well as the panicled sorghum, which is a kind of sorghum /30/ without sweetness and used for making brooms for sweeping. The seed of both plants is liked by birds.

137 VID /grapevine/. -- Farther on I have said that this plant
824 pre-eminently required for the Sacrifice, like wheat, thrives
[262] quite vigorously in this region. I add here that in the woods there is a tree with small leaves and unimportant wood, which rises up to some eight meters above the ground and whose fruit is the size of an olive, has a dark coffee color and a flavor like that of the grape, matures in the month of February, is edible, and is called "Ivaviyu" in Chiriguano. Also in the wild state is the native grape with its twining trunk. Its fruits are like a bunch of grapes; they are white and some even black, and they are good for the manufacture of brandy.

/30 cont./

137 824 276 YERBA DEL DIABLO. -- This is the datura which is so abundant in the countryside and fields and which is a real plague. It rises to one meter in height, has branches, broad leaves, white flowers, and fruit armed with spines which, when dry, are enough to draw blood. The leaves and seeds make one lose one's memory. In this respect I remember one incident when an Indian woman absent-mindedly or out of ignorance covered an olla of hot food with datura leaves; half an hour later she ate it and it gave her a bad headache and a short spell of vertigo. Her little granddaughter, a schoolgirl about six years old, ate some also, and she suffered a complete loss of memory and all her actions were those of a demented person, a state which lasted some 24 hours. It seems that the Chiriguano [159] do not know that this plant and its seeds and leaves are poisonous; the latter, dried, are medicinal, alleviate the effects of asthma, and are prescribed for asthmatic Indians. Christians know it by the name of chamico, and the Indians by that of "caazi," that is, painful herb.

137 824 SAPALLO /squash/. -- There are eleven species of this creeping plant, which I shall discuss in another chapter, only adding that watermelon and melon also grow here, as well as the cucumber and the beet. The "curugua" and the "curuguami" [262] of the Chiriguano are plants which are similar to the sapallo, but they climb trees and produce there an oblong, sweet, and fragrant fruit; when one enters a house, it is immediately evident if there are curugua fruits there; they are edible both green and ripe, but they are preferable in the ripe state.

[342] I shall forgo describing many trees and plants whose medicinal virtues are known; I shall take up others when dealing with medicines; however, before I forget it, I shall note here at the end of the flora that a region where /31/ there are damp places abounds in secular cedars, whose wood is used in carpentry for doors, windows, tables, etc. So that it may not be subject to rot, it is necessary to get mature plants whose color is light red; the whitish one is attacked by the wood borer; the odor of the wood is narcotic, and this property keeps away insects; its odor is similar to that of the cedar of Lebanon, and for this reason the conquistadors gave the name of cedar to this tree which the Chiriguano call "Igüirane," or stinking stick.

/35 cont./

*136 *825 than either. I have seen the pelt of one of these crossbreed animals which did incalculable damage among the cattle and horses of San Pascual Mission. The lion here is of the size of a large red dog and will not attack unless pursued, and wounded; it does damage to the flocks, making depredations until they are all gone, and it climbs trees when it finds itself pursued. The Indians kill it with arrows, and a good dog can chase it away from the flock that it is guarding. The lion has short hair and a long tail, a large head, and large paws like those of the jaguar, but it does not have a mane like the African lion. Its meat is pleasant when put in brine for a few hours; the hide has no intrinsic value, for which reason they only hunt it as a harmful animal. The aforesaid hide, however, is [157] medicinal; when applied on aches of the spine or hips, it cures or alleviates them.

MOFETA /skunk/. -- This little animal is very pretty in appearance and abounds in certain spots; it gets into hen houses to eat the eggs and, if it can, the chicks as well. The Indian sees nothing whatever attractive about the animal; rather he runs from it, because, in order to defend itself, it throws an extremely malodorous liquid, for which reason all animals flee from it, including the jaguar, and even more logically so does man; it can be smelled at a great distance, and should that liquid touch the clothing of some hapless person, the stench lasts for several days. /36/ Such defense is only used when it sees itself pursued; otherwise it is neither large nor dangerous, and in Chiriguano it is called "Amiane," or stinking animal.

MONKEY. -- The common monkey is called "Machi" in Chiriguano. It is found throughout the region, but it abounds from the left bank of the Río Grande or Abapó River, where especially in the morning it makes a great deal of noise with its whistles or some similar noise. They go in great numbers and prefer to clamber about on the rocks, where there is an abundance of tilandsia, which in these pages occupies the third place, the pith of which they eat. They do much harm in the maize fields. When the Indians go to their field at the time of choclo, or green ears of maize, before returning to town they

/37 cont./

*136 *825 [237] [757]

Tamandua meat is rather strong; it smells of ants, and they use its hide for their beds. This, that is, the leather, is medicinal when applied to the hips when they ache; it cures quite rapidly. It is called "Tami."

*136 TIGRE /jaguar/. -- Here we have the animal which is the king of the forests in the Chiriguano region /38/ and elsewhere. A fearsome animal because of its strength, speed, and cunning, fearsome because of its fangs and claws, fearsome, in fine, because it will resolutely attack every animal when it is hungry or is pursued and wounded. This king of the forest walks, runs, and leaps, climbs trees, scales cliffs, or crosses rivers, as circumstances dictate, for its own preservation. Wild and domestic animals, small and large, birds and reptiles, and the very fish flee and hide from the sight of this ferocious beast; man himself is often left the victim of its claws and fangs, and one experience is sufficient for it to continue attacking man. If the jaguar starts on calves, generally these are its daily diet; if it tries the meat of the ass, this will be its lunch, its supper, and its everything. Only with the bull, when it pits its strength against this powerful animal, does it always get the worst of it.

When the jaguar takes possession of a region and begins to fell cattle, horses, or burros, it is necessary to kill it or drive it away by pursuit, because it is so bold that it will fearlessly enter corrals near houses and kill the calves that it wants, being content with sucking their blood, but should it not have time for so much, it will pick up the first one and carry it off a short distance and calmly have its way. It seems that this animal knows the dominion it holds over the rest, including man himself. Should one meet it on any road, it does not flee, but calmly continues on its way, and then prudence dictates that the man stop, not be afraid, and speak loudly, and then the animal will go off into the woods; I have had this experience and others the same, but should one not behave in this way and is without weapons and good dogs, he exposes himself to being its victim.

The Indians call it "Yagua," and it is the jaguar of Spanish-speaking people; similar to the panther, it is not the

/40 cont./

224 animal is capable of distinguishing between the brave and
*[825] the cowardly, and the latter is the first to be attacked and consequently to be badly injured.

*825 Jaguar skin, as I have already said, has intrinsic value;
[554] it is used in saddleries for the bottom padding of saddles and
[281] for saddlebags; it is a luxury for persons of rank. The ani-
[759] mal has a quantity of fat, and this is a good remedy for
[439] rheumatism, aching bones, and other ailments; the Indians take it and sell it in the interior of the Republic and trade it for used clothing. It is to be noted, however, that they do falsify it, as they also falsify snake grease, because it can be understood that the killing of this ferocious animal is not a
[466] frequent thing. Rarely does the Chiriguano hunt the jaguar, and he is not always inclined to help the white man, but the latter forces his peons to do so, and they gather the fat and
[262] sell or present it to their friends or relatives. Jaguar meat is good food, although, to be sure, it smells wild, as does the skin, but this meat, if placed in salt water or brine overnight, loses its bad smell; they assert that this meat is like that of a cow.

*136 The male jaguar is quite large. I measured one, and it was two meters long from [illegible] tail, one meter high, and it weighed seven arrobas. The female is smaller; I measured one that had just been killed; from the tail it measured one meter and ten centimeters, was 75 centimeters high, and weighed four and a half arrobas. The female gives birth
[231] every three years, and the newborn cubs are always a pair, one male and one female; the mother is most dangerous when she has young /illustration appears here/ /41/ and defends them at any cost, but hunters first kill the mother and then try to catch the cubs alive; they almost always succeed and take them home to domesticate them, but this is an impossible job because they are jaguars forever; I have seen two of these cubs well chained but very bad. In general, cubs when taken away from their mother die in a few days either through lack of adequate food, which is milk, or also out of desperation upon finding themselves in the midst of beings foreign to their nature.

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*136 We can count among the amphibians the "Boicururu," or snake toad, which is nothing but the water tarantula, but it is very poisonous here; it is found near lakes in the swamps. Frogs are found in small numbers in the center of the region; [262] they abound where there is water on the banks of rivers; only the Toba and other barbarians eat them; the Chiriguano do not. There is an infinity of "Cururu" toads in terms of size, color, and song, one being distinguished among all of them, the one that the whites call "Rococo" and that is heard continually and loudly at a distance of one kilometer at night in rainy weather and where there is water.

*136 *825 [957] [164] The toad is medicinal; one or two large ones are gently caught alive and, one after the other, applied /43/ to parts of the body affected by erysipelas, which is cured very efficaceously, with the animal being left dead, doubtless because with its cold belly it absorbs all the heat which the sick person has in the said painful parts; more than once I have seen erysipelas cured in this way. In rainy weather there are so many of them that it is impossible to sleep near the place where they gather to sing their discordant tattoo; at the end of a heavy shower is when the noise of the toads is most unbearable.

*136 Fish abound in the large rivers, where there are shad, bagre, and dorado; the latter reach a length of two meters, as I have seen, and are very palatable and drip blood like cow's meat. Then in the same rivers, streams, and permanent lakes, there is an infinity of small "pira" fish, which are good to the taste, and finally there is no lack of eels, "Chorinchi," or the useful leeches, "Evoip[illegible]" Indians who live on the banks 43 of rivers of great volume trade in fish; to be sure, they plant fields, but generally they do not harvest because of the lack of rain, but obtain maize in exchange for fish; dried shad tastes like cod and is worth 10 and 20 centavos.

*136 Insects are innumerable, but not as abundant and varied in their form, size, and color as they are in the region of the Beni, the Mojo, and others; they are a hundred times more numerous than all the quadrupeds and birds together; there are bothersome ones, like mosquitoes and zancudos /long-beaked mosquito/, and there are poisonous ones, which, however, rarely cause death.

/43 cont./

*136 There are wasps, and they are of several classes, but the yellow or red ones are the most vicious; there are bees in the trees, in the roofs, in the walls, and in the ground, and all of them make hives in order to make honey and wax, but the best honey is that of the bees called señoritas. Both things, 222 237 that is, honey and wax, are known as beneficial by the Indians, [461] but they devote themselves to this very little, because they consider it the work of lowly and poor people, and the 237 Chiriguano does not like to consider himself such. Wax is 464 seldom gathered, even in times of scarcity, nor does the neophyte or new Christian work at earning his living by looking for beeswax.

*136 A spider bite almost always produces bad consequences, *825 which can be avoided by the use of ammonia; this is another [959] plentiful insect. In the rainy season they extend their webs from one tree to another, obstructing the road, no matter how wide it may be, and frequently travelers who are out at night or who get up early are bothered by these webs, which stick to their faces and clothing, /44/ just as the spiders themselves, which are so loathsome, not infrequently catch hold. The bite of those that live in the forest, they state, is not poisonous.

[859] All spiders are called "Yanduti" in Chiriguano, and the web, "Yanduti nupa," or spider's bed; from the web of the forest spiders the children make nets for catching birds or for their games. When wet they are quite elastic. The true tarantula, which the whites call apasanca and the Indians "Yanduti huasu," is quite ugly because of its fuzz, eight legs, and two arms. The natives state that it is poisonous, but its bite is not fatal. They almost never come out by twos, but upon killing one and wanting to know if it has a companion, it is enough to burn the dead one in order to cause the live one to come out the moment it smells the odor. The apasancas, or tarantulas, come out when it is about to rain and do not make a good impression. The natural enemy of spiders, including the tarantula, is another flying insect the size of an acorn, which the people of Santa Cruz call

/51 cont./

*13 *825 [262] [237] [293] [157]

Its meat is excellent, and I have eaten it on numerous occasions. The Indians go to hunt the ostrich to prepare for their bacchanalias; they trade their feathers or keep them, and with five of them make the "Yandugua," a kind of parasol of which I shall speak in its place. The fat is a most efficaceous remedy for the side, rheumatism, and ailments of the hips in men and animals, for coldness of the members, and for removing thorns by anointing with it the part opposite the place where the thorn has penetrated.

BANDURRIA. -- This is a bird which the Indians call "Toté" because this is the sound of its song. It has a long beak, long red legs, red and ash-colored feathers, /52/ and a long neck. It feeds on little worms and insects and is generally found in open fields and banks of rivers and lakes. The meat is like that of guinea fowl, but very tough, although if the outer skin is taken off before boiling or roasting it, it can be cooked easily.

The bandurria resembles the crane somewhat, but it is stationary, abounds everywhere, and is not solitary, but neither do they gather together much. A flock is composed at the most of some 12 or 15, and frequently one finds a single pair. If one of these is caught, its companion will fly away immediately, but will come back two or three times to find out what has happened. In this way it is easy for the hunter to kill both. The bandurria has a highly developed instinct, and when the hunter approaches, it quickly flies. When there are many, they fly like cranes, with one out in front to break the air. They do not fly very high and generally sleep in a hole in the rocks, where it is easy to hunt them after sunset.

BUHO /owl/. -- This is a large nocturnal bird like a condor and whitish in color; there are two kinds, the second is smaller and black, ash-gray with a white collar; the Chiriguano call the first one "Yancuruntu," because when it sings it seems to articulate this word. The female of the Yancuruntu answers "Yaparapiti," which in Spanish means "matemos" /let us kill/, from which the whites are inclined to jump to conclusions and start rumors that the Chiriguano are thinking about an

/55 cont./

*136 of a mate, and at the most there are three of them. Both sing at the same time. The female begins, and then the male continues, the song thus being prolonged for some four or five minutes. It is a very strange song or cry. They say *[825] that these birds announce the approach of wind or rain, and, if it is cloudy, they foretell the approach of clear or cloud- [223] less weather. Hunters who do not have the help of good dogs can only capture this bird with difficulty, because it runs and flies when hard pressed.

GARZA /heron/. -- This is a rather large, but light bird. It has a thick and somewhat long beak, flies little, and its locale is the lakes, ponds, and banks of rivers, where it finds *[825] its food. There are two kinds, one completely white, very white, for which reason the Chiriguano call it "Guiranti," or white bird, and the other is ash-gray and stays in the same places. [223] The Chiriguano do not hunt them, because they have very little meat.

GALLINAZO /buzzard/. -- This is a black bird, and repugnant to the sight, especially because of its bald head and neck; it feeds on the carcasses of dead animals, even a human body, nor does it refuse the chance to rip out the entrails and kill calves, lambs, and newborn suckling pigs, which it finds asleep and at a distance from their mothers. In the first instance it constitutes an excellent purifier of the air by making all the miasmas which come from the carrion disappear, because when there is any they finish it off in a few hours, for when it is abundant many of them gather. The buzzards discover dead animals and cattle killed by the jaguar; there are usually some turkey buzzards over the cattle and sheep corrals, where, despite the cleaning that they do, they sooner or later cause some damag[illegible]

[223] The Indian r[illegible]y hunts the buzzard, because its meat is [262] tough and strong-smelling. He does, however, kill it oc- *825 casionally as a remedy. The warm blood of this animal is ● 757 of some use in curing his double chin /papada/, or that of his daughter, who may be ashamed of such a protuberance. For this purpose the blood is placed on a strip of linen and tied around the throat. They state that it does have some effect, but this must have to do with incipient double-chins of a few ounces.

/55cont./

*825 ● 959 and not those veterans of several arrobas like gourds in the form of saddlebags, which are seen in abundance around Pozuelos, Piray, San Juan, and Pomabamba.

*136 *825 There is another large bird with the same instincts as the buzzard, called carcancho by the whites and "Caracara" by the Indians. It does not, however, kill calves; it does hunt and kill little lambs, suckling pigs, and chickens, disregarding with boldness and dissimulation the brood hen. /56/ This shameless, fearless bird is abundant everywhere and is capable of getting into kitchens and sticking its beak into the ollas; but its favorite spot is the corral, where it scratches about, looks for things, and eats, and like the most natural thing in the world it will pull out the entrails of a sleeping lamb or at the least blind it in one eye. The rascal gets into the nests of smaller birds and steals eggs or kills the young to eat them. All in all, it is a sad and ugly neighbor, with the result that all are its enemies, and some birds chase it out of their nests. Such is the practice of the bird that the Chiriguano call "Guirapipasa"; another called "Suiriri" gets on the shoulders of the carcancho and pecks it until it runs long distances.

[159] The Indians assert that carcancho fat is an efficacious remedy for the vision, and that they used it before modern medicines, which turned out to be more efficaceous and [262] active, were introduced. They eat its meat if it is fat. The [237] feathers of the carcancho and the buzzard are very strong, and [411] they put them on the ends of their arrows, so that they will not turn aside when they are shot and consequently will hit the mark better.

*136 [132] GOLONDRINA /swallow/. -- The heat is altogether too much at certain times of the year, with the thermometer in the shade up to 32° and in the sun up to 60°, but let it not be believed that this state of heat is the normal thing. There are months of the year, and in these months there are weeks and days, in which it is difficult to endure the cold, which is most intense in June and parts or all of July. As a result of this, the swallow, even here, is a pilgrim, emigrating at the end of April and returning at the beginning of October. There are some entirely black, and there are some with white breasts. The

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439 171 them in the area around the place called Basilio, and they take them in cages to the Argentine Republic.

*136 TOUCAN. -- A very unusual bird because of its long beak, which is almost as long as its body. This beak is yellow, red, and black, but very light; otherwise, since it is so large, it would be difficult to hold up. One who for the *[825] first time sees a toucan, called "Tunca" in Chiriguano, thinks that it is carrying an ear of maize in its beak. Toucans go in large flocks and have their favorite places; I know only ● [757] one variety of them. It is said that the beak, when ground up *[825] and taken in water, stops the flow of blood. It seems that the toucan only lives in hot climates. If it is taken to other places, it dies.

URRACA /magpie/. -- This flying creature is rather large and abundant. There are several species of them, [231] differentiated by their plumage. It is easily domesticated, and it is useful in the houses, because it kills all of the bugs or insects which multiply in them, but its size is no larger than that of the toucan. It is as restless and noisy in the houses as it is in the woods.

121 I here put an end to this brief description of the land inhabited by the Chiriguano and what is contained therein. All will understand that I did not attempt to discover and describe minutely each and every one of the plants, each and every one of the quadrupeds, amphibians, and insects, each and every one of the birds, but only those which seemed to me to be of the most importance. If it seems to my readers to be too much, or too little, they will be so kind as to excuse my faults; meanwhile, I am going to begin the real ethnography, which will be somewhat long so that it may be clearer and more pleasant. /64/ /Illustration appears here./

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881 304 [828] In general, with the method of pressing strongly on the patient's temples, the one performing the operation manages it so that the patient feels little or nothing of the pain of the piercing, according to what they say, and it is probable, because one sharp pain diminishes or makes another one feel less strong. But it is also certain that the boy, seeing himself before so many spectators and girls, makes every effort not to cry out or weep, because the Indians do not deny that many somewhat cowardly ones do shout and even cry a little (1).

1. Some boys, very fearful, when their fathers begin to talk to them about the tembeta and the need to have the hole made, run off to another tribe in the presence of their relatives, but the latter persuade them, and they return to their town.

I have asked more than one Indian and all agree in asserting that not a drop of blood comes from the hole. The day on [785] [784] which the imposition of the tembeta is done is a day of strict fasting, and they do not even let them drink a little chicha; other foods cannot be chewed by them for several days either. On some, somewhat careless ones, there is a swelling, and on [757] [824] others not. The swelling of the lip is avoided, according to them, by heating the leaves of the bush Urucuna in the flame or embers of the fire and applying them continually around the 881 hole. The cicatrization of the lip may take a month, during which time the little Chiriguano stays at home, letting himself be seen in the streets and in the plaza once in a while (2).

[759] 2. For a Chiriguano it is a great honor to put the tembeta in place on the boys, so that he asks nothing for this honorable operation; but the boy's parents make some small gift, which he receives with satisfaction.

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which rises continually to the sky in these interminable plains, taking behind it all of the trash that it finds along its way. It is called Cusumino, and, according to them, it causes pains in the feet, knees, and bones. When a whirlwind begins in a town, they try to cut it with a knife.

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Illnesses and Remedies

The most common illnesses among the Chiriguano are the intermittent fevers that are endemic, tuberculosis or consumption, eye disease, convulsive coughing, diarrhea, dysentery, mange or itch, and tumors accompanied by a kind of leprosy that covers a large part of the body. The intermittent fevers appear at the time of the first rains and continue until the time of the fruits and fresh maize. These fevers are not fatal, but one who is attacked by them has a rather afflicted life. Their remedies are vegetal; ● 757 they boil quebracho or algarroba bark, and they drink this water, but it does not always have a salutary effect. /286/ If a small dose of quinine is administered during the intermittent fevers, they immediately get well (1).

1. They get well with a small dosage, perhaps because their bodies are not accustomed to the remedies of the apothecary. Another efficacious remedy for the intermittent fevers is bitter coffee or coffee with a little sugar.

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The itch, tumors, and leprosy do not cause death. Chiriguano food is almost always saltless. They are not careful in selecting it, and stinking meat does not disgust them. Their water is not always clear; they bathe at any hour and, after bathing, do not dry their bodies. If it rains, they let the wet clothing dry on their person. From this and other causes come the many skin

164 /286 cont./ From this and other causes come the many skin
•757 diseases which do not let them sleep. The itch is cured with saltpeter found in the dry stream beds. They call it Curuyuqui, or salt for curing the itch, but this remedy does not always produce its effect. The itch principally attacks those of few years, and
[237] nursing infants catch it from their mothers. Lepers are cured very efficaciously by means of hot cow dung, and it is enough to apply it two or three times for a cure within three days without any further remedy, but they do not resign themselves easily to using this repugnant but efficacious remedy.

164 Smallpox and measles are epidemics which appear from time to time; for this reason I do not put them in the list of endemic diseases like the former ones. The Chiriguano runs from smallpox as a person with hydrophobia does from water, since through experience he knows that anyone who gets it has a hard time being saved from a horrible death. When it enters a town, it sows fear and desolation. Sick people resign themselves to death, and the healthy ones flee in terror to other tribes. It seems that it is not easy to attack smallpox directly, and up to now only vaccination has better effects (2).

797 2. When smallpox breaks out, the missionaries
164 go wherever their ministry is needed, like doctors and priests. Up to now none of them has caught it, perhaps because they are vaccinated or because they have different blood.

In 1909 the town of Cuevo, which is about eight kilometers from Yvu, was decimated by smallpox. I vaccinated all the people of Yvu and those who were not residents there. But the vaccine did not take in all of them, as occasionally happens. Nevertheless, few got sick and only two died. The remedy that I administered after the initial fever had begun was rather strong wine vinegar. The sickness ran its course only in those who had not drunk the /287/ vinegar or who had not been able to retain it in the stomach. I administered one cup every six hours three times, and it was enough for this terrible illness, which would cause so many deaths in Cuevo, to pass almost unperceived in the San Buenaventura Mission (1).

1. More people became sick and died in the

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Santa Rosa Mission, but the use of the vinegar, which I began to administer later, made the mortality stop.

Measles usually attacks children, as does diarrhea, and because they are very delicate it is difficult to treat them, for which reason almost all of them succumb. Lemon and vinegar are efficacious remedies for both illnesses; in many cases I have administered camomile with good results. Diarrhea in infants comes from a scarcity of food, for then the mothers eat very hot things, such as the fruit or potato of serpentine arum, algarrobas, and other wild plants, as a result of which the infants drink the very hot milk, which damages their bellies and produces inflammation (2).

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2. There exists near or around the lakes a herbaceous plant called pazote, and by the Indians and whites páico. A tisane made from this herb is efficacious against smallpox and measles.

Dysentery occurs in older people, and an occasional case of it shows up even in children. The cause of this illness is the very poor diet in times of want, when they eat wild roots and fruits. Here there is a very effective remedy, which the whites call méloncillo and the Indians Ñurantimbucu. This is a thorny bush with long thorns, from which its name comes. At the time when it buds, or in the springtime, its thorns are slightly purple, and its roots are the remedy. They are boiled and the patient is given this water to drink for a week. The eye sickness attacks all, big and small, without distinction and is so bad that some lose their sight completely or are left with only one eye. In the missions this is treated with white lead or lead acetate, and it suffices to apply it two or three times to bring about a complete cure.

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The convulsive cough, or whooping cough, is another illness which attacks children up to ten years old, causing many deaths. It shows up in the cold months and even in the rainy season, sometimes attacking grown-ups, among whom it does not cause death. There is in the hills a yellow flower which around here is called

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164 vira-vira. The tisane made from these flowers has salutary effects,
●757 but it is not strong enough to bring about a radical cure, /288/ especially if the precaution of wrapping the child up after the potion is drunk is not taken (1).

1. Most effective for whooping cough is the use of petroleum. The child is anointed from his forehead to his belly and made to drink a few drops. In 1910 almost all of those whom I treated with petroleum got well.

164 Consumption, or tuberculosis, attacks men and women and appears in both sexes as a stomach-ache. This pain can be considered the beginning of the sickness, which usually appears after the age of 40, but in certain places it carries to the grave persons who have not yet reached the age of 20.

In the Santa Rosa mission this disease alone, in less than ten years, caused the death of more than 70 schoolgirls; at that time this mortality was attributed to the bad water there, but as it is found in other places where the water is excellent there must be another cause. For young people or adolescents it could not be the continual fires, because there are none in the schools.

164 The Chiriguano has no remedy for tuberculosis, and one who
754 gets it is resigned to death, because whether or not he attributes
755 everything to sorcery, he believes in it and in the poison in this case; hence the sick person goes for help to the sorcerer, who to get rid of the illness, without succeeding, uses atrocious and even immoral means when dealing with women (2).

[997] 2. The missionary buys remedies from the apothecary to treat the Indians. These remedies are almost always repugnant. If the sick person does not drink it in the presence of the missionary, he will pour it out; he has more faith in the sorcerer.

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Other Illnesses and Remedies

759 According to the illnesses that exist, there are doctors and medicines among the Chiriguano. The former have not gone through any university other than experience, learning from the latter to prepare medicines, not only from plants and herbs, but also from minerals and even from the excrement of animals. The doctors receive the praise of individuals who know less than they and are differentiated even by name from the evil sorcerers, who are called Mbaecuá, while the former are called Ipaye, and the medicines or drugs are called Moa.

●757 The oil that is necessarily a side product of the preparation of chicha is very good for curing headaches. Salt, ground and mixed with the urine of infants, is drunk and is a good anodyne for stomach-aches. Dampness and cold produce a tightening of the nerves, which causes atrocious pain in more /289/ than one person. To cure this disorder they pull up a branch of ulala /a cactus/, Nancagüina, strip off the spines, parch it, and, when it is good and hot, apply it to the affected parts and get well. They use something else to cure dysentery. They burn yellow maize, grind it with watermelon seed, and have those attacked by the disease drink it (1).

1. The meloncillo /little melon/ is a remedy which the whites told me about. It is more effective, but the Chiriguano have no faith in it or do not use it out of weakness.

When a sick person suffers a pain in his side, he asks for a balled-armadillo shell, grinds it up, and drinks it. At the same time what is left is heated at the fire and applied to the pain, [164] and it stops as if by magic. If measles comes out on the lips, the sorcerer or doctor applies a tick which has been taken off some dog's flesh, and thus it disappears. Sometimes tumors or a swelling in the throat and in the knees appear, and these are made to disappear through the application of the herb called Urucuna. It is heated at the fire in a small olla and applied. Another herb, called Yandurimbíu, is also good for this. They

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● 757 also get sick with vomiting of blood or a hemorrhage (2).

2. A hemorrhage is treated by drinking every hour a mixture of equal parts of water, wine vinegar, and bee's honey. They soon get better with this remedy.

The Caaupaya is used for a stomach-ache, and root boiled soto root cures the pains produced in the feet by hot and wet ground. Guaya is a species of bejuco which is plentiful in Ivu. It is heated, applied to a swelling in the side, and cures it. Guaya root is eaten by the Indians, but if dogs eat the excrement of the Indian or the tuber itself, they die in a few minutes, which also happens to foxes. Among the Indians goiter /papero/ is not so frequent, although it exists in certain places. They say that it comes to those who sleep in the sun. They cure themselves of it with Tutía, which is a yellow fruit similar to a small apple which abounds in the pampas. Eye sickness is treated with algarrobillo bark, which they grind and then put drops of the liquid into the eye. The small caraguata cures diarrhea (3).

3. Incipient goiter is also cured by tying around the throat on a rag the blood of the turkey buzzard, carcancho, or bandurria. The mineral water of Ivu contains the germs of goiter.

The Cáairo is an herb one meter high. There are two types, one of which has red flowers and is used to decorate altars, and the Indians use the herb and flowers to treat the itch. It is a more /290/ effective remedy than saltpeter since it breaks out again with the latter. The kind that has yellow flowers is most abundant in Ivu and is used to treat the intermittent fever. Cáairo means bitter herb. To treat leprosy, which I have mentioned, they also use snake fat and Iñái, which literally means tooth of the water. It is a little plant which grows up out of the water and is quite small. To treat whooping cough they also use an empty yellow-wasp nest, which they burn or boil in water, and, strained once, they give the lukewarm water to the sick people to drink.

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757 The Tingui is a large tree: with its bark tied to the belly, they cure incipient dropsy, which in their language is called Ipunga. Boiled mistol root and tapir fat cures gonorrhea. With chicken, beetle, and cicada fat they cure earaches. Only a few drops need be put in. 752 For poisoning they use wild chirimoyo root. Araticu: for snake bite the herb called ururuu, calabash, tobacco, and its nicotine. For wounds produced by a rabid dog, they use melted wax applied to the wound. If the wound was produced by a weapon in a fight, it is treated by applying burned chicken feathers to it. Finally, if in women the uterus becomes displaced, it is put back in its place by giving the patient ground shell drunk in water.

These and many others are medicines that the Chiriguano use: I shall not make a list of the others because during my investigations I have come to realize that this is tied up with superstition, with which the witch doctors inoculate the sick (1).

1. It is not surprising that the Indians believe in the sorcerers, because even the whites let themselves be deceived by these imposters, who exist even among Christians.

Death and Funerals

763 When a Chiriguano is fatally sick, all his nearest relatives begin to gather, and, as the illness progresses, the distant relatives, friends, and neighbors frequently pay visits, while those nearby never leave the house where death will soon reign. If the sick person is a married man, the woman is continually at the head of his bed, holding him up on her knees, stroking his vigorous hair, and caressing his face, while furtive and silent tears slide /illustration appears here/ /291/ copiously down her cheeks, almost all of which come to rest on the dying man's shoulders or chest, providing him with a palliative for his pains, because he understands the misery which his wife is feeling and the way that she and his children, if he has any, will miss him (1).

1. When the woman is past 40, she sheds real

(Text Continues on P 393)

4: Nino--437 M-3 (1890-1911) 1912 SF10 Chiriguano SF10
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They devote themselves to planting, hunting, fishing, and raising livestock; they rarely go en masse to Chiriguano towns and even more rarely to those of the whites, to which they do little damage.

Miscellany

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In the section "Flora" in Etnografía Chiriguana /Chiriguano Ethnography/ I described the passion flower of the Chaco region of Bolivia, which is called granadilla de monte /wild passion flower/ there. Its roots are medicinal and those with pretenses of being doctors there employ them to cure tapeworm.

There is a small tree called "Nuranti mbucu," long thorn, by the Chiriguano, and meloncillo /small melon/ by the whites of Santa Cruz. It grows three or four meters high at most; when it blooms, its tips are a quite light purple; its roots are put on to boil for a period of one and a half hours, and the clarified water is an effective remedy for treating dysentery.

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The Franciscan school /colegio/ at Potosí, the Reverend Father Prefect of Missions, and the Padres Conversores of the same school deferred to my suggestion that they /324/ help me in publishing the Etnografía Chiriguana, for which I thank each and every one of them from the bottom of my heart.

I extend in these pages the same thanks to a group of gentlemen from the city of Sucre, who, encouraged by Doctor Don Tomás Arana, assisted in the publication with a subscription of ten bolivianos per copy.

Finally, special thanks have been earned by two young ladies from the city of Sucre and another from the city of Oruro, who, through special deference to the author, have favored him with extraordinary alms, without imposing upon him any obligation whatsoever.

Ee 754 177 /216 cont./ They also sometimes believe that they are bewitched by the Indians. A colonist, Gutierrez, flogged an Indian. The latter bewitched him, so that he became ill. Inside his stomach it sounded like the croaking of a frog.

Ee Ce 755 754 The medicine men try to discover the bewitcher with smoke. I did not see how this was done. The bewitcher, if he or she is discovered, is killed.

000 /217/ In the following I shall speak about the connection of the medicine men with the great spirits.

Ee 755 756 [7] Ee [177] There seems to be no difference in the appearance and the method of the medicine men among the Choroti and Ashluslay and among the Chané and Chiriguano. It is the same sucking out of foreign objects that have entered the body through bewitchment. Among the latter the medicine men are more secretive than among the former. Perhaps their contact with the whites has had the effect that they themselves are beginning to doubt their art.

Ee ●757 [171] Ee [237] Ce 757 237 There is a difference, however, in the common remedies. The first-named Indian tribes obtain their remedies, as a rule, from the vegetable kingdom. They boil decoctions of certain plants. The Chané and Chiriguano, on the other hand, except for certain plants, use animal remedies. Thus, on the Rio Itiyuro, the Chané use the fat of herons for swellings, wild pig fat for fever, jaguar fat for pains in the bones, and toucan beaks for female hemorrhages. The Chané on the Rio Parapiti use the fat of the ostrich for chest pains, of the iguana lizard for conjunctivitis, of the chicken for everything, and maize beer for colds. I saw fat applied exclusively for external use.

Ce 752 Ce [515] The Chané Indian is remarkable with regard to aseptic treatment. I saw several times how they treat wounds in accordance with a most modern method, namely, with boiled water. This is different from the whites' use of pig excrement and the fresh urine of human beings, along with salt, for the same purpose. The reason that these Indians are familiar with such a modern method is undoubtedly their great cleanliness. They are used to washing themselves constantly. They probably hit upon the idea

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Ce /34 cont./
756 most other Indians of South America, there is a professional
1171 physician who is charged with the treatment of the sick, this
treatment in most cases consisting of sorcery among these
C Indians too. The physician attempts to dispel the evil by
Ce sucking out foreign objects which have penetrated the body of
755 the bewitched sick person. In addition to such treatment,
757 remedies are used among the Chiriguano and Chané, which,
[824] in addition to those made of plant substances, include the
[237] fat of various animals applied externally for different illnesses.
Ce The Chané treat wounds with boiling water.
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Burial among the Chiriguano and Chané who live outside
C the missions is generally still done in urns, according to
Ce 764 primordial custom. According to Nordenskiöld (149), the
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149. Nord. 1, p. 208.

large pots in which chicha is prepared are also used as funeral urns, and another pot is used to close the urn. Often the dying person, even before being completely dead, or soon after death, is crammed into the urn in a squatting position. A calabash of water is placed with the dead person in the urn,
Ce which is buried within the house. Commonly the house, after
768 the burial, is abandoned for some time, but is occupied again later. Such a funeral urn of the Chiriguano of the Caipipendi
C Valley is shown in a drawing by Erland Nordenskiöld (150).
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150. Nord. 1, Fig. 113.

Up to half of the urn, which is provided with a cover, is disenterred. Nordenskiöld's statement that the Chiriguano use the same pots which serve for the preparation of meals as funeral urns is significant. From that we can deduce that a funeral urn found in other regions might also have served, during the lifetime of the dead person buried in it, some other purpose related to the economy of those Indians.